FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
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The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service.	)	File No. SAT-LOA-20160622-00058
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OPPOSITION OF 5G AMERICAS

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OPPOSITION OF 5G AMERICAS

5G Americas[1] submits this opposition to The Boeing Company's ("Boeing") Application for authority to launch and operate a non-geostationary satellite orbit ("NGSO") fixed satellite service ("FSS") system operating in low Earth orbit in the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz bands.[2] The Application is inconsistent with rules the Commission recently adopted in the *Spectrum Frontiers* proceeding and if granted, would pre-judge decisions that the Commission has proposed to make in that proceeding.[3] The United States is the first country in

[1] Board Members of 5G Americas includes America Movil, AT&T, Cisco, Ericsson, HP Enterprise, Intel Corporation, Kathrein, Nokia, Sprint, Telefonica, and T-Mobile USA, Inc..

[2] The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service, IBFS File No. SAT-LOA-20160622-00058 (filed June 22, 2016) ("Application")*; see also, Satellite Policy Branch Information, Boeing Application Accepted for Filing in Part, IBFS File No. SAT-LOA-20160622-00058, Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz Bands*, Public Notice, DA 16-1244 (rel. Nov. 1, 2016) ("Public Notice").

[3] *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands; Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band; Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band; Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0- 38.0 GHz and 40.0-40.5 GHz for Government Operations*, Report and Order and Further Notice of

the world to adopt rules for use of spectrum in the upper millimeter wave spectrum for new mobile broadband technologies, commonly called "5G". Boeing's Application calls for FSS allocation in 10 GHz of spectrum, the majority of which is under consideration in the Spectrum Frontiers proceeding designed to "secure the Nation's future in the next generational evolution of wireless technology to so-called 5G." While Boeing claims that these services can coexist on these bands, evidence supported by 5G Americas and other parties suggests otherwise. As such, granting Boeing's Application threatens U.S. leadership on 5G. Even if there were not a current proceeding proposing terrestrial flexible use of the spectrum specified in the Application, the reallocation of the bands to satellite services requested by the Application could only be resolved in a general applicable rulemaking, and not through a specific licensing application.

I. INTRODUCTION AND BACKGROUND

5G Americas has long promoted internationally harmonized spectrum in order to promote the deployment throughout the Americas of wireless broadband services. 5G Americas works with regulators, technical standards bodies, and other global wireless organizations to promote seamless interoperability and convergence for the benefit of customers in our Region. Internationally harmonized spectrum enables economies of scale and scope that benefit consumers through more innovative and affordable services and applications. For this reason, 5G Americas has agreed to represent our Region of the Americas in the Global 5G MOU events scheduled biennially as the industry standardizes 5G over the next few years towards the target of 2020. In 2018, 5G Americas will host a Global 5G MOU Event in the Americas, and has participated in those to date Asia and in Europe, which was held last month.

Proposed Rulemaking, 31 FCC Rcd. 8014 (2016) (subparts referred to respectively as the "*Report and Order"* and the *"FNPRM*").

The next generation of wireless connectivity—the fifth generation, or 5G—is essential to seizing the 21st century opportunities in wireless broadband technologies. High-band millimeter wave spectrum is key to unlocking the potential for 5G. The United States is leading the world with the Commission's decisions this year. The Commission should not threaten such leadership with decisions that threaten this 5G ecosystem.

On July 14, 2016, the Commission adopted a Report and Order (R&O) with new rules to enable rapid development and deployment of next generation 5G technologies and services in the millimeter wave (mmW) bands[4]. These new rules open up nearly 11 GHz of high-frequency spectrum for flexible, mobile and fixed use wireless broadband – 3.85 GHz of licensed spectrum and 7 GHz of unlicensed spectrum by creating a new Upper Microwave Flexible Use service (UMFUS) in the 28 GHz (27.5-28.35 GHz), 37 GHz (37-38.6 GHz), and 39 GHz (38.6-40 GHz) bands, and a new unlicensed band at 64-71 GHz.

The Commission's rules reflect a careful balance that will allow both satellite and terrestrial networks to continue to expand in a flexible manner as well as rules to protect incumbent services. The Boeing Application threatens to upset that careful balance. The Commission made the following decisions through the Report and Order:

- Upper Microwave Flexible Use Licensing: Adopted a general framework applied across three licensed bands to make spectrum available with similar rules tailored to the characteristics of each band. This framework will likely serve as the basis for how the Commission will pursue flexible use licensing in additional mmW bands going forward.

[4] . For context and full details, including the Report and Order see: https://www.fcc.gov/document/fcc-adopts-rules-facilitate-next-generation-wireless-technologies

- 27.5-28.35 GHz and 38.6-40 GHz bands: Created new upper microwave flexible use licenses authorizing mobile operations in these bands using geographic area licensing. Maintained the co-primary Federal Fixed-Satellite Service and Mobile Satellite Service allocations in the 39.5-40 GHz band, limited to military systems.
- 37-38.6 GHz band: Adopted a band plan that allows for continuity of commercial operations between the 37 and 39 GHz bands. The Commission also protected a limited number of Federal military sites across the full 37 GHz band and maintained the existing Federal fixed and mobile allocations throughout the band. In the 37-37.6 GHz band, the Commission created a space for coordinated co-primary shared access between Federal and non-Federal users.
- 64-71 GHz band: Authorized operations in the 64-71 GHz band under Part 15 based on the rules the Commission recently adopted for the adjacent 57-64 GHz band.
- Incumbent Operations: Adopted rules that facilitate incumbent terrestrial use of the spectrum and permit expansion of satellite operations with certain limitations.
- Granted mobile operating rights to existing Local Multipoint Distribution Service and 39 GHz band licensees. In the 28 GHz, 39 GHz, and part of the 37 GHz bands, the Commission adopted rules that will provide various mechanisms for Fixed-Satellite Service licensees to upgrade the status of their Earth stations without significantly impacting terrestrial operations.
- Revised the band plan for the 38.6-40 GHz band to provide licensees with wider blocks of contiguous spectrum and allow existing licensees to move into the new band plan.
- Implemented rules to protect incumbent Federal operations and adopt a sharing paradigm to ensure Federal access to the 37 GHz band.

- Adopted technical rules to facilitate licensed operation and mitigation methods so that incumbent operations are protected in the 28 GHz and 39 GHz bands.
- Deleted the broadcasting and broadcasting-satellite service allocations from the 42-42.5 GHz band (42 GHz band) and declined to allocate the band to the fixed-satellite service (space-to-Earth).

The Boeing Application threatens to up-end the delicate balance wrought after months of public comments and dialogue between various entities, let alone undermine the ability of the U.S. to make more spectrum available to meet demand for enhanced mobile broadband, and applications for machine-type communications, IoT, and low-latency critical communications.

As consumer use of data-intensive applications such as video and Internet access continues to rise, the demand for mobile network capacity will increase.[5] Meeting these needs will continue to create jobs and drive the economic engine the wireless industry supports. Spectrum licensed to U.S. wireless carriers, for instance, generates more than $400 billion annually in economic activity and wireless technologies further enable other sectors of the economy.[6] Recognizing the growing demand for network capacity and noting that the "[millimeter wave] bands could be particularly useful in supporting very high capacity networks in areas that require such capacity,"[7] the Commission has taken action in the *Spectrum Frontiers*

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[5] *See* CISCO, CISCO VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2015–2020 WHITE PAPER, at 26 (2016), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.pdf ("Because mobile video content has much higher bit rates than other mobile content types, mobile video will generate much of the mobile traffic growth through 2020.").

[6] *See* Coleman Bazelon and Giulia McHenry, *Mobile Broadband Spectrum: A Vital Resource for the U.S. Economy*, THE BRATTLE GROUP, 2 (May 11, 2015) ("Brattle Group Report"), http://www.ctia.org/docs/default-source/default-document-library/brattle_spectrum_051115.pdf (also noting that employing 1 person in the wireless industry results in an additional 6.5 people finding employment).

[7] *FNPRM*, ¶ 7.

proceeding to make available spectrum in the bands above 24 GHz for fixed and mobile terrestrial use. The Boeing Application does not take into consideration – and in some parts conflicts with – the actions the Commission has taken in *Spectrum Frontiers*. Therefore, 5G Americas advises that the Commission should dismiss the Application, or at least delay its consideration until rules for flexible use of the bands proposed in the *Spectrum Frontiers* proceeding and in Boeing's Application are resolved.

II. BOEING'S APPLICATION IS INCONSISTENT WITH THE *REPORT AND ORDER*

The Application requests use of the 37.5-42.5 GHz band for space-to-Earth communications and the 47.2-50.2 and 50.4-52.4 GHz bands for Earth-to-space communications. The Commission has deferred consideration of Boeing's request to operate in the 42-42.5 GHz and 51.4-52.4 GHz bands.[8] The remaining bands under consideration are the 37.5-40 GHz, 40-42 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz bands.[9] In the *Report and Order* in the *Spectrum Frontiers* proceeding, the Commission adopted rules intended to increase terrestrial use of the 37.5-40 GHz band.[10]

Specifically, the Commission designated the 37.5-40 GHz band for terrestrial operations on a primary basis, and it limited the satellite use of the band. Non-federal satellite Earth stations will be authorized in the 39 GHz band on a first-come, first-served basis, with protection from any harmful interference from terrestrial transmissions under particular conditions. Those conditions are: (1) the protection zone around the Earth station where no terrestrial operations may be located is larger than necessary to protect the Earth station; (2) no more than three

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8 *See* Public Notice at 1.

9 *See* Public Notice at 1.

10 *See Report and Order*, ¶¶ 73-124. The 40-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz bands are addressed in Section III, below.

protection zones per PEA will be authorized; (3) the existing and proposed protection zones must not exceed 0.1 percent of the population; (4) the protection zones must not infringe upon any major event venue, arterial street, interstate or U.S. highway, urban mass transit route, passenger railroad, or cruise ship port; and (5) there must be coordination with the terrestrial licensee to ensure that the protection zone does not encompass existing terrestrial operations.[11] In the 37.6-38.6 GHz band, non-federal space-to-Earth FSS operations are allowed subject to coordination.[12] In addition, to protect against interference from transmitting FSS Earth stations into 5G networks, the Commission also limited the power flux density ("PFD") at market borders from satellites in the band toward Earth.[13] All of the above actions further the Commission's interest in advancing 5G mobile wireless technologies.[14] 5G Americas notes that the Commission did not seek further comment in the *FNPRM* on the primary designation of the 37.5-40 GHz band for terrestrial use.

The Application, however, inconsistently with the Commission's recently adopted rules and interest in promoting U.S. leadership on 5G, asks the Commission to allow increased satellite use of the band by waiving the current PFD limits.[15] To support this request, Boeing claims that its NGSO system would provide features that would enable sharing of the 37.5-40 GHz band with potential Upper Microwave Flexible Use Service ("UMFUS") systems. Its claim

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11 *See Report and Order*, ¶ 93.

12 *See Report and Order*, ¶¶ 103-105, 116.

13 *See Report and Order*, ¶¶ 309-312.

14 *See Report and Order*, ¶ 1 ("These high frequencies previously have been best suited for satellite or fixed microwave applications; however, recent technological breakthroughs have newly enabled advanced mobile services in these bands, notably including very high speed and low latency services. To promote the deployment of these highly beneficial technologies, we are acting quickly – more quickly than most of our counterparts around the world – to establish a coherent framework built on a robust public record.").

15 *See* Application at 17-21.

is based on an analysis that makes assumptions and speculations about the parameters of UMFUS systems and potential UMFUS deployment configurations. Boeing has used the same analysis (the same configuration, the same parameters, etc.) in its previous filings in this proceeding.[16] 5G Americas' membership has raised questions about Boeing's assumptions on 5G system characteristics and its methodology for its conclusions.[17] Others have raised concerns as well, including Straight Path, which has provided a detailed link budget analysis for various interference scenarios between FSS and 5G services in this band, and its comments in response to the *FNPRM* reiterate that, at the current PFD limit, FSS downlink (space-to-Earth) already causes non-negligible impairment to 5G base stations and mobile station receivers.[18]

Even using Boeing's own methodology and assumptions disproves Boeing's claim that its proposed NGSO system will not interfere with UMFUS. In particular, the Application includes a parametric analysis of satellite downlink emissions into the mobile handset receivers as shown in the table below.[19] This analysis is the same as Boeing provided in previous filings in this proceeding[20] and shows an interference degradation of 0.6 dB from one satellite into mobile/handset receiver and is what Boeing relies on for justification of its request for PFD limits increase and operation of satellite user equipment in the 37/39 GHz band.

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16 *See, e.g.*, Boeing *FNPRM* Comments at 25-41; The Boeing Company *Ex Parte*, GN Docket No. 14-177, *et al.* (filed June 7, 2016). In its November NGSO filing, Boeing requested satellite use of the 28 GHz band, which the Commission has also allocated for UMFUS. 5G Americas similarly opposes the November application of Boeing, to the extent its proposed NGSO use of the 28 GHz band would be inconsistent with the Commission's July rules for UMFUS in the 28 GHz band.

17 *See, e.g.*, T-Mobile *FNPRM* Comments at 29-30.

18 *See* Straight Path *FNPRM* Comments at 16.

19 *See* Application at 77.

20 *See, e.g.*, Boeing *FNPRM* Comments at 26; The Boeing Company *Ex Parte*, GN Docket No. 14-177, *et al.* (filed June 7, 2016).

5G Forward Link - Base Station to Mobile	Sat PFD	Worst-case
	5G Isolation	Worst-case
PARAMETER	UNITS	VALUE
Satellite PFD at Base Station	dBW/m^2/MHz	-105.0
Antenna Rx Gain at 5G Mobile/Handset [1]	dBi	13.0
5G Mobile Rx Isolation to Sat signal [1]	dB	0.0
Satellite Received Power density after mobile/hanset antenna gain	dBW/MHz	-145.3
5G Mobile/Hanset Noise Figure	dB	7.0
5G Mobile Receiver Noise Density	dBW/MHz	-137.0
Interference to Noise ratio, I_{SAT}/N_{5G}	dB	-8.3
	%	14.8
Interference Degradation	dB	**0.60**

Table 1 - NGSO FSS interference into UMFUS 5G User Equipment[21]

As Table 1 shows, to obtain 0.6 dB interference degradation, Boeing assumes an antenna receiver gain of 13 dBi for the 5G mobile/handset. This is an arbitrary value and, as 5G technology evolves, many other 5G user equipment antenna configurations could be employed. 5G Americas believes that there would be much higher NGSO FSS interference into UMFUS 5G user equipment than presented by Boeing and well above the protection criteria threshold for mobile service, I/N = -6 dB, as characterized by ViaSat.[22] In addition, this level of degradation of mobile service is due to a single satellite; it would be more severe when multiple NGSO satellites signals cause interference into the user equipment receiver – a scenario likely if the Commission accepts additional applications for satellite services in this band.

Moreover, the PFD limits in the 37.5-40 GHz band are still under consideration in the *FNPRM*.[23] Boeing recently attempted to address criticisms made against its comments in response to the *FNPRM* – appropriately in the context of the *Spectrum Frontiers* proceeding.[24]

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21 Table segments excerpted from Boeing's Application. *See* Application at 77.

22 *See* ViaSat *FNPRM* Comments at Exhibit B.

23 See *FNPRM*, ¶ 499.

24 *See* The Boeing Company *Ex Parte*, GN Docket No. 14-177 *et al.* (filed Nov. 21, 2016).

The exchange between parties, including Boeing, in that proceeding only confirms our point. According to the Commission's own language in the *Report and Order*, Boeing's proposal is untenable. By applying for expanded satellite access to the 37.5-40 GHz band and inhibiting terrestrial mobile use of this spectrum, the Application runs counter to the Commission's decisions in *Spectrum Frontiers*. Unless the Commission changes the rules adopted in the *Report and Order*, the Boeing request cannot be granted. At the very least, consideration of the use of the band with Boeing's proposed PFD limits would be premature until the Commission addresses this issue in the context of the *FNPRM*.

III. CONSIDERATION OF THE REMAINING COMPONENTS OF BOEING'S PETITION IS PREMATURE

With regard to the 40-42 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz bands, Boeing's Application is also contrary to, and pre-judges many of the Commission's proposals in the *Spectrum Frontiers FNPRM*. The *Spectrum Frontiers* proceeding has a robust record and the participation of a large, varied set of interested parties. The Commission should determine fundamental policy and spectrum allocation matters there, where it will be able to make a fully informed decision as part of a notice and comment rulemaking, and not in the more limited context of Boeing's Application. In contrast, grant of the Application would require the Commission to prematurely decide questions concerning the bands raised in the *FNPRM* without the benefit of a full, detailed record, and to *de facto* allocate the bands for further satellite use. 5G Americas addresses each of the remaining bands at issue below.

40-42 GHz. In the *FNPRM*, the Commission proposed to authorize fixed and mobile operations in the 42-42.5 GHz band under the new Part 30 Upper Microwave Flexible Use

Service ("UMFUS") rules.[25] Several parties in the *Spectrum Frontiers* proceeding asked the Commission to extend this proposed band down to 40 GHz, and to consider the potential use of the entire 40-42.5 GHz band for terrestrial operations, especially as the 40-42 GHz band is not used in a robust manner.[26] These terrestrial operations would be conducted under conditions similar to the use of the 37.5-40 GHz band, and are therefore inconsistent with the proposals in Boeing's Application, including its proposal to use higher PFD limits in those bands.[27] Accordingly, Commission action on the Application is premature until the Commission addresses allocation of the 40-42 GHz band in the context of the *FNPRM*.

47.2-50.2 GHz. There are no currently authorized FSS operations in the 47.2-50.2 GHz band, although there is an Earth-to-space satellite allocation.[28] There are also primary non-Federal fixed and mobile allocations throughout the 47.2-50.2 GHz band, and while there are currently no service rules for terrestrial operations, the Commission has proposed in the *FNPRM* to authorize fixed and mobile operations under the Part 30 rules.[29] As Boeing's comments in response to the *FNPRM* make clear, Boeing's proposed use of this band directly conflicts with the Commission's proposal to allow terrestrial mobile use of the band on a primary basis.

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25 *See FNPRM*, ¶ 403.

26 *See, e.g.*, CTIA *FNRPM* Comments at 13 ("[T]he Commission should consider reallocating the entire 40-42.5 GHz band for mobile uses rather than focusing solely on the 42-42.5 GHz band."); Comments of Ericsson, GN Dkt. No. 14-177, *et al*., at 11 (filed Sept. 30, 2016) ("Ericsson *FNRPM* Comments") ("Ericsson also recommends expanding the 42.0–42.5 GHz band, to include the 40.0–42.0 GHz band and the 42.5–43.5 GHz band for a 3.5-GHz-wide band spanning 40.0–43.5 GHz[.]");Comments of Huawei Technologies, Inc. (USA) and Huawei Technologies Co., Ltd., GN Dkt. No. 14-177, *et al*., at 6 (filed Sept. 30, 2016) ("Huawei *FNRPM* Comments") ("Huawei would recommend, however, for the proposed 42 GHz band that the Commission extend the applicable frequency bands from 42-42.5 GHz to 40-42.5 GHz band for UMFUS."); Straight Path *FNRPM* Comments at 5-6 ("Straight Path . . . urges the Commission to authorize mobile operations in the 40-42 GHz band.").

27 *See* Application at 17-21.

28 *See FNPRM*, ¶ 411.

29 *See FNPRM*, ¶ 410.

Boeing's proposed service would require use of the entire 47.2-50.2 GHz band for FSS uplink,[30] and would require "deploy[ing] very large numbers of two-way end user terminals at homes and offices throughout the country[,]"[31] making it "very unlikely that there would be significant usable 'white spaces' between adjacent satellite end user terminals within which mobile devices of other communications services could consistently operate."[32]

Moreover, what little UMFUS use Boeing would be "willing to explore"[33] would restrict UMFUS to secondary operations at indoor locations only – a proposal that can hardly be considered shared use of the spectrum. The Commission is currently exploring whether and how to permit shared use of the band between FSS and terrestrial operations in the *FNPRM*.[34] 5G Americas opposes such "shared" use – the entire band should be dedicated for terrestrial use. However, should the Commission choose to permit FSS operations in the band, 5G Americas suggests that the Commission segment the band to allow respective UMFUS and FSS priority sub-bands.[35] Boeing's proposed use of the entirety of 47.2-50.2 GHz band on a priority basis directly implicates outstanding issues regarding FSS use of this spectrum in the *FNPRM*.

Boeing's Application also addresses sharing with federal users and protection of passive Earth Exploration Satellite Services and Radioastronomy Service ("RAS")[36] – issues similarly

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30 *See* Application at 60.

31 *See* Boeing *FNPRM* Comments at 15.

32 *See* id..

33 *See* Boeing *FNPRM* Comments at 16.

34 *See FNPRM*, ¶¶ 412-13.

35 *See, e.g.,* Boeing *FNPRM* Comments at 19 ("Boeing cannot, however, locate its gateways using the Commission's proposed restrictions that are based on quantities of gateways in individual counties or Partial Economic Areas ('PEAs'). To support the broadband demand growth to 2020 and beyond to 2025, Boeing will need to construct and operate several thousand gateways in the United States. The gateways for other V-band satellite systems will need to be accommodated as well.").

36 *See* Application at 94-97.

under consideration in the *FNPRM*.[37] Grant of Boeing's Application would pre-judge each of the above issues, eliminating options before they can be fully considered, inconsistent with what the Chairman has called a National Priority, and the goal of U.S. leadership in 5G. Accordingly, the Commission should postpone consideration of Boeing's requested use of the band until the questions in the *FNPRM* are resolved.

50.4-51.4 GHz. In the *FNPRM*, the Commission proposed to authorize fixed and mobile terrestrial operations in this band under the Part 30 rules. The Commission's proposal includes authorizing terrestrial operations in the spectrum up to 52.6 GHz.[38] As with the 47.2-50.2 GHz band, Boeing's proposed use of the 50.4-51.4 GHz band would severely curtail possibilities for terrestrial mobile operations[39]. Sharing with federal users[40] is also being considered in the *FNPRM*.[41] Grant of Boeing's Application would pre-judge the Commission's proposal for flexible fixed and mobile use of the 50.4-51.4 GHz band, and it would additionally compromise the Commission's ability to make the extended 50.4-52.6 GHz band available such operations.

IV. EVEN IF THESE BANDS WERE NOT UNDER CONSIDERATION IN THE PENDING PROCEEDING, AN APPLICATION WOULD NOT BE THE APPROPRIATE CONTEXT TO MAKE ALLOCATION DECISIONS

Boeing's Application requests a *de facto* new allocation of the specified bands for satellite use. Even if there were no ongoing proceeding related to these bands, a proposal that fundamentally changes the future use of spectrum bands cannot be addressed in the context of an application proceeding that relies on numerous waiver requests. Instead, the Administrative

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37 *See FNPRM*, ¶¶ 416.

38 *See FNPRM*, ¶ 420.

39 *See* Boeing *FNPRM* Comments at 15.

40 *See* Application at 97.

41 *See FNPRM*, ¶ 422.

Procedures Act ("APA") requires that this critical question of general applicability be addressed in a rulemaking proceeding, and not in a specific licensing application.

Boeing's Application proposes an entirely different use of the spectrum from that contemplated by the Commission. Grant of the Application would only be permitted through rule waivers some of which have only just been adopted and are not yet even in effect. However, the APA prohibits the Commission from altering the fundamental use of future spectrum rights through an application process. Instead, the APA requires that rules of general applicability be adopted through a rulemaking proceeding with sufficient notice and public comment – just as the Commission has already initiated.[42]

The *Spectrum Frontiers* proceeding is ample evidence that a rulemaking proceeding is the proper forum to address these issues. There, after notice and much public comment, the Commission will decide what use of the target bands best satisfies the public interest. Action on the Application now will impermissibly circumvent that process, contrary to the public interest.

V. CONCLUSION

5G Americas applauds the Commission's leadership in making more millimeter wave spectrum available for flexible terrestrial use to meet the increased demand for enhanced mobile broadband, low-latency, highly-reliable critical communications and machine type-communications for IoT. The Boeing Application is inconsistent with the Commission's goals

[42] *See, e.g.*, *City of Arlington v. FCC*, 668 F.3d 229, 242 (5th Cir. 2012) ("Adjudications typically "resolve disputes among specific individuals in specific cases, whereas rulemaking affects the rights of broad classes of unspecified individuals.") (citing *Yesler Terrace Cmty. Council v. 51 Cisneros*, 37 F.3d 442, 448 (9th Cir. 1994)) (affirmed, 133 S.Ct. 1863 (2013)). In *City of Arlington*, the 5th Circuit held that the FCC's mistake in that proceeding was 'harmless,' because the Court found that all interested parties participated in the adjudication proceeding, but the same behavior in this proceeding might not be harmless, particularly considering that most parties would reasonably believe the issues are addressed in the *Spectrum Frontiers* proceeding, not in the context of an application. More importantly, the Commission has the opportunity now to conform to the long-standing requirement to conduct a rulemaking proceeding where one is required, rather than test later whether its failure to do so was harmless.

articulated in its *Spectrum Frontiers* proceeding of ensuring that the U.S. can continue to lead in the wireless revolution. Moreover, grant of the Application would contradict decisions the Commission has already made and prejudge decisions the Commission has before it in this important proceeding. As the Voice for 5G and LTE throughout the Americas, 5G Americas appreciates that U.S. leadership is critical in ensuring more rapid adoption of new wireless technologies throughout our Region. Accordingly, 5G Americas asks that the Commission deny Boeing's Application. The Commission should not make complex spectrum allocation determinations without the benefit of the *Spectrum Frontier* proceeding's robust and on-going record. The Commission should consider reallocation issues raised by Boeing's Application, if at all, in the context of the *Spectrum Frontiers* proceeding.

Respectfully submitted,

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December 1, 2016

CERTIFICATE OF SERVICE

I, Jan Walker, hereby certify that on December 1, 2016 a copy of the foregoing Opposition of 5G Americas was served by first-class mail, postage paid, on each of the following:

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